

# Money Creation

Chapter 31 explained the institutional structure of banking in the United States today, the functions which banks and the other depository institutions and money perform, and the composition of the money supply. Chapter 32 explains how banks create money—**checkable deposits**—and the factors that determine and limit the money-creating ability of commercial banks. The other depository institutions, such as thrift institutions, also create checkable deposits, but this chapter focuses on the commercial banks to simplify the discussion.

The convenient and simple device used to explain commercial banking operations and money creation is the **balance sheet**. Shown within it are the **assets**, **liabilities**, and **net worth** of commercial banks. All banking transactions affect this balance sheet. The first step to understanding how money is created is to understand how various simple and typical transactions affect the commercial bank balance sheet.

In reading this chapter you must analyze for yourself the effect of each and every banking transaction discussed on the balance sheet. The important items in the balance sheet are checkable deposits and reserves because **checkable deposits are money**. The ability of a bank to create new checkable deposits is determined by the amount of reserves the bank has. Expansion of the money supply depends on the possession by commercial banks of excess reserves. They do not appear explicitly in the balance sheet but do appear there implicitly because **excess reserves** are the difference between the **actual reserves** and the **required reserves** of commercial banks.

Two cases—the single commercial bank and the banking system—are presented to help you build an understanding of banking and money creation. It is important to understand that the money-creating potential of a single commercial bank differs from the money-creating potential of the entire banking system. It is equally important to understand how the money-creating ability of many single commercial banks is **multiplied** and influences the **money-creating ability** of the banking system as a whole.

## ■ CHECKLIST

When you have studied this chapter you should be able to

- ☐ Recount the story of how goldsmiths came to issue paper money and became bankers who created money and held fractional reserves.
- ☐ Cite two significant characteristics of the fractional reserve banking system today.

- ☐ Define the basic items in a bank's balance sheet.
- ☐ Describe what happens to a bank's balance sheet when the bank is created, it buys property and equipment, and it accepts deposits.
- ☐ Explain the effects of the deposit of currency in a checking account on the composition and size of the money supply.
- ☐ Define the reserve ratio.
- ☐ Compute a bank's required and excess reserves when you are given the needed balance-sheet figures.
- ☐ Explain why a commercial bank is required to maintain a reserve and why a required reserve is not sufficient to protect the depositors from losses.
- ☐ Indicate whether required reserves are assets or liabilities for commercial banks and the Federal Reserve.
- ☐ Describe how the deposit of a check drawn on one commercial bank and deposited into another will affect the reserves and excess reserves of the two banks.
- ☐ Show what happens to the money supply when a commercial bank makes a loan.
- ☐ Show what happens to the money supply when a commercial bank buys government securities.
- ☐ Describe what would happen to a commercial bank's reserves if it made loans (or bought government securities) in an amount greater than its excess reserves.
- ☐ State the money-creating potential of a commercial bank (the amount of money a commercial bank can safely create by lending or buying securities).
- ☐ Explain how a commercial bank's balance sheet reflects the banker's pursuit of the two conflicting goals of profit and liquidity.
- ☐ Explain how the Federal funds market helps reconcile the goals of profits and liquidity for commercial banks.
- ☐ State the money-creating potential of the banking system.
- ☐ Explain how it is possible for the banking system to create an amount of money that is a multiple of its excess reserves when no individual commercial bank ever creates money in an amount greater than its excess reserve.
- ☐ Define the monetary multiplier.
- ☐ Use the monetary multiplier and the amount of excess reserves to compute the money-creating potential of the banking system.
- ☐ Illustrate with an example using the monetary multiplier how money can be destroyed in the banking system.
- ☐ Discuss how bank panics during the early 1930s led to a contraction of the nation's money supply and worsened economic conditions (Last Word).

## ■ CHAPTER OUTLINE

1. The United States has a **fractional reserve banking system**. This term means that banks only keep a part or a fraction of their checkable deposits backed by cash reserves.

a. The history of the early goldsmiths illustrates how paper money came into use in the economy and how banks create money. The goldsmiths accepted gold as deposits and began making loans and issuing money in excess of their gold holdings.

b. The goldsmiths' fractional reserve system is similar to today's fractional reserve banking system, which has two significant characteristics: banks can create money in such a system and banks are subject to "panics" or "runs," and thus need government regulation.

2. The **balance sheet** of a single commercial bank is a statement of the *assets*, *liabilities*, and *net worth* (stock shares) of the bank at a specific time; and in the balance sheet, the bank's assets equal its liabilities plus its net worth. This balance sheet changes with various transactions.

a. **Transaction 1: Creating a bank.** A commercial bank is founded by selling shares of stock and obtaining cash in return. Stock is a liability and cash is an asset.

b. **Transaction 2: Acquiring property and equipment.** A commercial bank needs property and equipment to carry on the banking business. They are assets of the bank.

c. **Transaction 3: Accepting deposits.** When a bank accepts deposits of cash, the cash becomes an asset to the bank, and checkable deposit accounts that are created are a liability. The deposit of cash in the bank does not affect the total money supply. It only changes its composition by substituting checkable deposits for currency (cash) in circulation.

d. **Transaction 4: Depositing reserves in the Federal Reserve Bank.**

(1) Three reserve concepts are vital to an understanding of the money-creating potential of a commercial bank.

(a) The **required reserves**, which a bank *must* maintain at its Federal Reserve Bank (or as **vault cash** at the bank—which can be ignored in this textbook example), equal the reserve ratio multiplied by the checkable deposit liabilities of the commercial bank.

(b) The **actual reserves** of a commercial bank are its deposits at the Federal Reserve Bank (plus the vault cash which is ignored in this textbook example).

(c) The **excess reserves** are equal to the actual reserves less the required reserves.

(2) The **reserve ratio** is the ratio of required reserves to a bank's own checkable deposit liabilities. The Fed has the authority to establish and change the ratio within limits set by Congress.

e. **Transaction 5: Clearing a check drawn against the bank.** The writing of a check on the bank and its deposit in a second bank results in a loss of reserves (assets) and checkable deposits (liabilities) for the first bank and a gain in reserves and deposits for the second bank.

3. A single commercial bank in a multibank system can create money as the following two additional transactions show.

a. **Transaction 6: Granting a loan.** When a single commercial bank grants a loan to a borrower, its balance sheet changes. Checkable deposit liabilities are increased by the amount of the loan and the loan value is entered as an asset. In essence, the borrower gives an IOU (a promise to repay the loan) to the bank, and in return the bank creates money by giving the borrower checkable deposits. The bank has "monetized" the IOU and created money. When the borrower writes a check for the amount of the loan to pay for something and that check clears, then the checkable deposits are reduced by the amount of that check. A bank lends its funds only in an amount equal to its preloan excess reserves because it fears the loss of reserves to other commercial banks in the economy.

b. **Transaction 7: Buying government securities.** When a bank buys government securities, it increases its own checkable deposit liabilities and therefore the supply of money by the amount of the securities purchase. The bank assets increase by the amount of the securities it now holds. The bank buys securities only in an amount equal to its excess reserves because it fears the loss of reserves to other commercial banks in the economy.

c. An individual commercial bank balances its desire for profits (which result from the making of loans and the purchase of securities) with its desire for liquidity or safety (which it achieves by having excess reserves or vault cash). The Federal funds market allows banks with excess reserves to lend funds overnight to banks that are short of required reserves. The interest rate paid on the overnight loans is the **Federal funds rate**.

4. The ability of a **banking system** composed of many individual commercial banks to lend and create money is a multiple (greater than 1) of its excess reserves and is equal to the excess reserves of the banking system multiplied by the checkable-deposit (or monetary) multiplier.

a. The banking system as a whole can do this even though no single commercial bank ever lends an amount greater than its excess reserves because the banking system, unlike a single commercial bank, does not lose reserves. If a bank receives a deposit of currency, it increases its checkable deposits. This change increases the amount of excess reserves the bank has available for loan. If a loan is made on these excess reserves, then it creates additional checkable deposits that, when spent, may be deposited in another bank. That other bank now has additional excess reserves and can increase its lending, and so the process continues.

b. The **monetary multiplier** is equal to the reciprocal of the required reserve ratio for checkable deposits. The maximum expansion of checkable deposits is equal to the initial excess reserves in the banking system times the monetary multiplier. To illustrate, if the required reserve ratio was 20 percent, then the monetary multiplier would be 5 (or 1 divided by .20). If excess reserves in the banking system were \$80 million, then a maximum of \$400 million in money could be created (or, 5 times \$80 million).

c. The money-creating process of the banking system can also be reversed. When loans are paid off, money is destroyed.

5. (Last Word). During the early 1930s, more than 6,000 banks failed within three years. This resulted in a multiple contraction of the nation's money supply that totaled about 25 percent. The decline in the money supply contributed to the Great Depression. In 1933, banks were shut for a week for a bank holiday and a deposit insurance program was established to give confidence to bank depositors and to reduce the potential for panics, bank runs, and large withdrawals of deposits.

#### ■ HINTS AND TIPS

1. Note that several terms are used interchangeably in this chapter: "commercial bank" (or "bank") is sometimes called "thrift institution" or "depository institution."

2. A bank's balance sheet must balance. The bank's assets are either claimed by owners (net worth) or by nonowners (liabilities).  $Assets = liabilities + net\ worth$ .

3. Make a running balance sheet in writing for yourself as you read about each of the eight transactions in the text for the Wahoo Bank. Then determine if you understand the material by telling yourself (or a friend) the story for each transaction without using the text.

4. The **maximum amount of checkable-deposit expansion** is determined by multiplying two factors: the excess reserves by the monetary multiplier. Each factor, however, is affected by the required reserve ratio. The monetary multiplier is calculated by dividing 1 by the required reserve ratio. Excess reserves are determined by multiplying the required reserve ratio by the amount of new deposits. Thus, a change in the required reserve ratio will change the monetary multiplier and the amount of excess reserves. For example, a required reserve ratio of 25% gives a monetary multiplier of 4. For \$100 in new money deposited, required reserves are \$25 and excess reserves are \$75. The maximum checkable-deposit expansion is \$300 ( $4 \times \$75$ ). If the reserve ratio drops to 20%, the monetary multiplier is 5 and excess reserves are \$80, so the maximum checkable-deposit expansion is \$400. Both factors have changed.

5. Be aware that the monetary multiplier can result in *money destruction* as well as money creation in the banking system. You should know how the monetary multiplier reinforces effects in one direction or the other.

#### ■ IMPORTANT TERMS

fractional reserve banking system

balance sheet

vault cash

required reserves

reserve ratio

excess reserves

actual reserves

Federal funds rate

monetary multiplier

#### SELF-TEST

##### ■ FILL-IN QUESTIONS

1. The banking system used today is a (total, fractional) \_\_\_\_\_ reserve system, which means that (100%, less than 100%) \_\_\_\_\_ of the money deposited in a bank is kept on reserve.

2. There are two significant characteristics to the banking system of today. Banks can create (reserves, money) \_\_\_\_\_ depending on the amount of \_\_\_\_\_ they hold. Banks are susceptible to (panics, regulation) \_\_\_\_\_ or "runs," and to prevent this situation from happening, banks are subject to government \_\_\_\_\_.

3. The balance sheet of a commercial bank is a statement of the bank's (gold account, assets) \_\_\_\_\_, the claims of the owners of the bank, called (net worth, liabilities) \_\_\_\_\_, and claims of the nonowners, called \_\_\_\_\_. This relationship would be written in equation form as: \_\_\_\_\_.

4. The coins and paper money that a bank has in its possession are (petty, vault) \_\_\_\_\_ cash or (till, capital) \_\_\_\_\_ money.

5. When a person deposits cash in a commercial bank and receives a checkable deposit in return, the size of the money supply has (increased, decreased, not changed) \_\_\_\_\_.

6. The legal reserve of a commercial bank (ignoring vault cash) must be kept on deposit at (a branch of the U.S. Treasury, its district Federal Reserve Bank) \_\_\_\_\_.

7. The reserve ratio is equal to the commercial bank's (required, gold) \_\_\_\_\_ reserves divided by its checkable-deposit (assets, liabilities) \_\_\_\_\_.

8. The authority to establish and vary the reserve ratio within limits legislated by Congress is given to the (U.S. Treasury, Fed) \_\_\_\_\_.

9. If commercial banks are allowed to accept (or create) deposits in excess of their reserves, the banking system is operating under a system of (fractional, currency) \_\_\_\_\_ reserves.

10. The excess reserves of a commercial bank equal its (actual, required) \_\_\_\_\_ reserves minus its \_\_\_\_\_ reserves.

11. The basic purpose for having member banks deposit a legal reserve in the Federal Reserve Bank in their district

is to provide (liquidity for, control of) \_\_\_\_\_ the banking system by the Fed.

12. When a commercial bank deposits a legal reserve in its district Federal Reserve Bank, the reserve is (a liability, an asset) \_\_\_\_\_ to the commercial bank and \_\_\_\_\_ to the Federal Reserve Bank.

13. When a check is drawn on Bank X, deposited in Bank Y, and cleared, the reserves of Bank X are (increased, decreased, not changed) \_\_\_\_\_ and the reserves of Bank Y are \_\_\_\_\_; deposits in Bank X are (increased, decreased, not changed) \_\_\_\_\_ and deposits in Bank Y are \_\_\_\_\_.

14. A single commercial bank in a multibank system can safely make loans or buy government securities equal in amount to the (required, excess) \_\_\_\_\_ reserves of that commercial bank.

15. When a commercial bank makes a new loan of \$10,000, the supply of money (increases, decreases) \_\_\_\_\_ by \$ \_\_\_\_\_. When a commercial bank buys a \$10,000 government bond from a securities dealer, the supply of money (increases, decreases) \_\_\_\_\_ by \$ \_\_\_\_\_.

16. A bank ordinarily pursues two conflicting goals; one goal is the desire to make money, or (profits, liquidity) \_\_\_\_\_, and the other goal is the need for safety, or \_\_\_\_\_.

17. When a bank lends temporary excess reserves held at its Federal Reserve Bank to other commercial banks that are temporarily short of legal reserves, it is participating in the (government securities, Federal funds) \_\_\_\_\_ market. The interest rate paid on these overnight loans is called the (government securities, Federal funds) \_\_\_\_\_ rate.

18. The monetary multiplier is equal to 1 divided by the (excess, required) \_\_\_\_\_ reserve ratio. The greater the reserve ratio, the (larger, smaller) \_\_\_\_\_ the monetary multiplier.

19. The banking system can make loans (or buy government securities) and create money in an amount equal to its (required, excess) \_\_\_\_\_ reserves multiplied by the (required reserve ratio, monetary multiplier) \_\_\_\_\_.

20. Assume that the required reserve ratio is 16.67% and the banking system is \$6 million short of required reserves. If the banking system is unable to increase its reserves, the banking system must (increase, decrease) \_\_\_\_\_ the money supply by (\$6, \$36) \_\_\_\_\_ million.

## ■ TRUE-FALSE QUESTIONS

Circle T if the statement is true, F if it is false.

1. Goldsmiths increased the money supply when they accepted deposits of gold and issued paper receipts to the depositors. T F

2. Modern banking systems use gold as the basis for the fractional reserve system. T F

3. The balance sheet of a commercial bank shows the transactions in which the bank has engaged during a given period of time. T F

4. A commercial bank's assets plus its net worth equal the bank's liabilities. T F

5. Cash held by a bank is sometimes called vault cash. T F

6. When a bank accepts deposits of cash and puts them into a checking account, there has been a change in the composition of the money supply. T F

7. A commercial bank may maintain its legal reserve either as a deposit in its Federal Reserve Bank or as government bonds in its own vault. T F

8. The required reserves that a commercial bank maintains must equal its own checkable-deposit liabilities multiplied by the required reserve ratio. T F

9. The actual reserves of a commercial bank equal excess reserves plus required reserves. T F

10. Required reserves are sufficient to meet demands for the return of all funds that are held as checkable deposits at commercial banks. T F

11. Required reserves help the Fed control the lending ability of commercial banks. T F

12. The reserve of a commercial bank in the Federal Reserve Bank is an asset of the Federal Reserve Bank. T F

13. A check for \$1000 drawn on Bank X by a depositor and deposited in bank Y will increase the excess reserves in Bank Y by \$1000. T F

14. A bank that has a check drawn and collected against it will lose to the recipient both reserves and deposits equal to the value of the check. T F

15. When Manfred Iron and Coal Company borrows \$30,000 from a bank, the money supply has increased by \$30,000. T F

16. A single commercial bank can safely lend an amount equal to its excess reserves multiplied by the monetary multiplier ratio. T F

17. The granting of a \$5000 loan and the purchase of a \$5000 government bond from a securities dealer by a commercial bank have the same effect on the money supply. T F

18. The selling of a government bond by a commercial bank will increase the money supply. T F

19. A commercial bank seeks both profits and liquidity, but these are conflicting goals. T F

20. The Federal funds rate is the interest rate at which the Federal government lends funds to commercial banks. T F

21. The reason that the banking system can lend by a multiple of its excess reserves, but each individual bank can only lend "dollar for dollar" with its excess reserves, is that reserves lost by a single bank are not lost to the banking system as a whole. T F

22. The monetary multiplier is excess reserves divided by required reserves. T F

23. The maximum checkable-deposit expansion is equal to excess reserves divided by the monetary multiplier. T F

24. If the banking system has \$10 million in excess reserves and if the reserve ratio is 25%, the system can increase its loans by \$40 million. T F

25. When a borrower repays a loan of \$500, either in cash or by check, the supply of money is reduced by \$500. T F

#### ■ MULTIPLE-CHOICE QUESTIONS

*Circle the letter that corresponds to the best answer.*

1. The fractional reserve system of banking started when goldsmiths began

- (a) accepting deposits of gold for safe storage
- (b) issuing receipts for the gold stored with them
- (c) using deposited gold to produce products for sale to others
- (d) issuing paper money in excess of the amount of gold stored with them

2. The claims of the owners of the bank against the bank's assets is the bank's

- (a) net worth
- (b) liabilities
- (c) balance sheet
- (d) fractional reserves

3. When cash is deposited in a checkable-deposit account in a commercial bank, there is

- (a) a decrease in the money supply
- (b) an increase in the money supply
- (c) no change in the composition of the money supply
- (d) a change in the composition of the money supply

4. A commercial bank has actual reserves of \$9000 and liabilities of \$30,000, and the required reserve ratio is 20%. The excess reserves of the bank are

- (a) \$3000
- (b) \$6000
- (c) \$7500
- (d) \$9000

5. The primary reason commercial banks must keep required reserves on deposit at Federal Reserve Banks is to

- (a) protect the deposits in the commercial bank against losses
- (b) provide the means by which checks drawn on the commercial bank and deposited in other commercial banks can be collected
- (c) add to the liquidity of the commercial bank and protect it against a "run" on the bank
- (d) provide the Fed with a means of controlling the lending ability of the commercial bank

6. Reserves that a commercial bank deposits at a Federal Reserve Bank are

- (a) an asset to the Federal Reserve Bank and a liability of the commercial bank
- (b) an asset of the commercial bank and a liability of the Federal Reserve Bank
- (c) used as insurance funds for the Federal Deposit Insurance Corporation
- (d) used as insurance for the National Credit Union Administration

7. A depositor places \$750 in cash in a commercial bank, and the reserve ratio is 33.33%; the bank sends the \$750 to the Federal Reserve Bank. As a result, the *actual reserves* and the *excess reserves* of the bank have been increased, respectively, by

- (a) \$750 and \$250
- (b) \$750 and \$500
- (c) \$750 and \$750
- (d) \$500 and \$500

8. A bank that has a check drawn and collected against it will

- (a) lose to the recipient bank both reserves and deposits
- (b) gain from the recipient bank both reserves and deposits
- (c) lose to the recipient bank reserves, but gain deposits
- (d) gain from the recipient bank reserves, but lose deposits

9. A commercial bank has no excess reserves until a depositor places \$600 in cash in the bank. The bank then adds the \$600 to its reserves by sending it to the Federal Reserve Bank. The commercial bank then lends \$300 to a borrower. As a consequence of these transactions, the size of the money supply has

- (a) not been affected
- (b) increased by \$300
- (c) increased by \$600
- (d) increased by \$900

10. A commercial bank has excess reserves of \$500 and a required reserve ratio of 20%; it grants a loan of \$1000 to a borrower. If the borrower writes a check for \$1000 that is deposited in another commercial bank, the first bank will be short of reserves, after the check has been cleared, in the amount of

- (a) \$200
- (b) \$500
- (c) \$700
- (d) \$1000

11. The buying of government securities by commercial banks is most similar to the

- (a) making of loans by banks because both actions increase the money supply
- (b) making of loans by banks because both actions decrease the money supply
- (c) repayment of loans to banks because both actions decrease the money supply
- (d) repayment of loans to banks because both actions increase the money supply

12. A commercial bank sells a \$1000 government security to a securities dealer. The dealer pays for the bond in cash, which the bank adds to its vault cash. The money supply has

- (a) not been affected
- (b) decreased by \$1000
- (c) increased by \$1000
- (d) increased by \$1000 multiplied by the reciprocal of the required reserve ratio

13. A commercial bank has deposit liabilities of \$100,000, reserves of \$37,000, and a required reserve ratio of 25%. The amount by which a *single commercial bank* and the amount by which the *banking system* can increase loans are, respectively

- (a) \$12,000 and \$48,000
- (b) \$17,000 and \$68,000
- (c) \$12,000 and \$60,000
- (d) \$17,000 and \$85,000

14. If the required reserve ratio were 12.5%, the value of the monetary multiplier would be

- (a) 5
- (b) 6
- (c) 7
- (d) 8

15. The commercial banking system has excess reserves of \$700, makes new loans of \$2100, and is just meeting its reserve requirements. The required reserve ratio is

- (a) 20%
- (b) 25%
- (c) 30%
- (d) 33.33%

16. The commercial banking system, because of a recent change in the required reserve ratio from 20% to 30%, finds that it is \$60 million short of reserves. If it is unable to obtain any additional reserves it must decrease the money supply by

- (a) \$60 million
- (b) \$180 million
- (c) \$200 million
- (d) \$300 million

17. Only one commercial bank in the banking system has an excess reserve, and its excess reserve is \$100,000. This bank makes a new loan of \$80,000 and keeps an excess reserve of \$20,000. If the required reserve ratio for all banks is 20%, the potential expansion of the money supply from this \$80,000 loan is

- (a) \$80,000
- (b) \$100,000

- (c) \$400,000
- (d) \$500,000

Use the following balance sheet for the First National Bank to answer Questions 18, 19, 20, 21, and 22. Assume the required reserve ratio is 20%.

Assets		Liabilities and Net Worth	
Reserves	\$ 50,000	Checkable deposits	\$150,000
Loans	70,000	Stock shares	100,000
Securities	30,000		
Property	100,000		

18. This commercial bank has excess reserves of

- (a) \$10,000
- (b) \$20,000
- (c) \$30,000
- (d) \$40,000

19. This bank can safely expand its loans by a maximum of

- (a) \$50,000
- (b) \$40,000
- (c) \$30,000
- (d) \$20,000

20. Using the original bank balance sheet, assume that the bank makes a loan of \$10,000 and has a check cleared against it for the amount of the loan; its reserves and checkable deposits will now be

- (a) \$40,000 and \$140,000
- (b) \$40,000 and \$150,000
- (c) \$30,000 and \$150,000
- (d) \$60,000 and \$140,000

21. Using the original bank balance sheet, assume that the bank makes a loan of \$15,000 and has a check cleared against it for the amount of the loan; it will then have excess reserves of

- (a) \$5,000
- (b) \$10,000
- (c) \$15,000
- (d) \$20,000

22. If the original bank balance sheet was for the commercial banking system, rather than a single bank, loans and deposits could have been expanded by a maximum of

- (a) \$50,000
- (b) \$100,000
- (c) \$150,000
- (d) \$200,000

Answer Questions 23 and 24 on the basis of the following consolidated balance sheet for the commercial banking system. All figures are in billions. Assume that the required reserve ratio is 12.5%.

Assets		Liabilities and Net Worth	
Reserves	\$ 40	Checkable deposits	\$200
Loans	80	Stock shares	120
Securities	100		
Property	200		

23. The maximum amount by which this commercial banking system can expand the supply of money by lending is

- (a) \$120 billion
- (b) \$240 billion
- (c) \$350 billion
- (d) \$440 billion

24. If there is a deposit of \$20 billion of new currency into checking accounts in the banking system, excess reserves will increase by

- (a) \$16.5 billion
- (b) \$17.0 billion
- (c) \$17.5 billion
- (d) \$18.5 billion

25. If the dollar amount of loans made in some period is less than the dollar amount of loans paid off, checkable deposits will

- (a) expand and the money supply will increase
- (b) expand and the money supply will decrease
- (c) contract and the money supply will decrease
- (d) contract and the money supply will increase

## PROBLEMS

1. The following table shows the simplified balance sheet of a commercial bank. Assume that the figures given show the bank's assets and checkable-deposit liabilities *prior to each of the following four transactions*. Draw up the balance sheet as it would appear after each of these transactions is completed and place the balance-sheet figures in the appropriate column. Do *not* use the figures you place in columns a, b, and c when you work the next part of the problem; start all parts of the problem with the printed figures.

		(a)	(b)	(c)	(d)
<b>Assets:</b>					
Cash	\$100	\$	\$	\$	\$
Reserves	200				
Loans	500				
Securities	200				
<b>Liabilities and net worth:</b>					
Checkable deposits	900				
Stock shares	100	100	100	100	100

- a. A check for \$50 is drawn by one of the depositors of the bank, given to a person who deposits it in another bank, and cleared (column a).
- b. A depositor withdraws \$50 in cash from the bank, and the bank restores its vault cash by obtaining \$50 in additional cash from its Federal Reserve Bank (column b).
- c. A check for \$60 drawn on another bank is deposited in this bank and cleared (column c).
- d. The bank sells \$100 in government bonds to the Federal Reserve Bank in its district (column d).

2. Following are five balance sheets for a single commercial bank (columns 1a–5a). The required reserve ratio is 20%.

- a. Compute the required reserves (A), ignoring vault cash, the excess reserves (B) of the bank (if the bank is short of reserves and must reduce its loans or obtain additional reserves, show this by placing a minus sign in front of the amounts by which it is short of reserves), and the amount of new loans it can extend (C).

	(1a)	(2a)	(3a)	(4a)	(5a)
<b>Assets:</b>					
Cash	\$ 10	\$ 20	\$ 20	\$ 20	\$ 15
Reserves	40	40	25	40	45
Loans	100	100	100	100	150
Securities	50	60	30	70	60
<b>Liabilities and net worth:</b>					
Checkable deposits	175	200	150	180	220
Stock shares	25	20	25	50	50
A. Required reserves	\$	\$	\$	\$	\$
B. Excess reserves					
C. New loans					

- b. In the following table, draw up for the individual bank the five balance sheets as they appear after the bank has made the new loans that it is capable of making.

	(1b)	(2b)	(3b)	(4b)	(5b)
<b>Assets:</b>					
Cash	\$	\$	\$	\$	\$
Reserves					
Loans					
Securities					
<b>Liabilities and net worth:</b>					
Checkable deposits					
Stock shares					

3. The following table shows several reserve ratios. Compute the monetary multiplier for each reserve ratio and enter the figures in column 2. In column 3 show the maximum amount by which a single commercial bank can increase its loans for each dollar's worth of excess reserves it possesses. In column 4 indicate the maximum amount by which the banking system can increase its loans for each dollar's worth of excess reserves in the system.

(1)	(2)	(3)	(4)
12.50%	\$	\$	\$
16.67			
20			
25			
30			
33.33			

4. The table in the next column is the simplified consolidated balance sheet for all commercial banks in the economy. Assume that the figures given show the banks' assets and liabilities *prior to each of the following three transactions* and that the reserve ratio is 20%. Do *not* use the figures you

placed in columns 2 and 4 when you begin parts **b** and **c** of the problem; start parts **a**, **b**, and **c** of the problem with the printed figures.

		(1)	(2)	(3)	(4)	(5)	(6)
<b>Assets:</b>							
Cash	\$ 50	\$	\$	\$	\$	\$	\$
Reserves	100						
Loans	200						
Securities	200						
<b>Liabilities and net worth:</b>							
Checkable deposits	500						
Stock shares	50	50	50	50	50	50	50
Loans for Federal Reserve	0						
Excess reserves							
Maximum possible expansion of the money supply							

**a.** The public deposits \$5 in cash in the banks and the banks send the \$5 to the Federal Reserve, where it is added to their reserves. Fill in column 1. If the banking system extends the maximum amount of new loans that it is capable of extending, show in column 2 the balance sheet as it would then appear.

**b.** The banking system sells \$8 worth of securities to the Federal Reserve. Complete column 3. Assuming the system extends the maximum amount of credit of which it is capable, fill in column 4.

**c.** The Federal Reserve lends \$10 to the commercial banks; complete column 5. Complete column 6 showing the condition of the banks after the maximum amount of new loans that the banks are capable of making is granted.

#### ■ SHORT ANSWER AND ESSAY QUESTIONS

- How did the early goldsmiths come to issue paper money and then become bankers?
- Explain the difference between a 100% and fractional reserve system of banking.
- What are two significant characteristics of a fractional reserve system of banking?
- Why does a bank's balance sheet balance?
- Explain what happens to the money supply when a bank accepts deposits of cash.
- What are legal reserves? How are they determined? How are legal reserves related to the reserve ratio?
- Define the meaning of excess reserves. How are they calculated?
- Explain why bank reserves can be an asset to the depositing commercial bank but a liability to the Federal Reserve Bank receiving them.
- Do the reserves held by commercial banks satisfactorily protect the bank's depositors? Are the reserves of commercial banks needed? Explain your answers.

**10.** The owner of a sporting goods store writes a check on her account in a Kent, Ohio, bank and sends it to one of her suppliers who deposits it in his bank in Cleveland, Ohio. How does the Cleveland bank obtain payment from the Kent bank? If the two banks were in Kent and New York City, how would one bank pay the other? How are the excess reserves of the two banks affected?

**11.** Explain why the granting of a loan by a commercial bank increases the supply of money.

**12.** Why is a single commercial bank able to lend safely only an amount equal to its excess reserves?

**13.** How does the buying or selling of government securities by commercial banks influence the money supply?

**14.** Commercial banks seek both profits and safety. Explain how the balance sheet of the commercial banks reflects the desires of bankers for profits and for liquidity.

**15.** What is the Federal funds rate?

**16.** Discuss how the Federal funds market helps banks reconcile the two goals of profits and liquidity.

**17.** No one commercial bank ever lends an amount greater than its excess reserves, but the banking system as a whole is able to extend loans and expand the money supply by an amount equal to the system's excess reserves multiplied by the reciprocal of the reserve ratio. Explain why this is possible and how the multiple expansion of deposits and money takes place.

**18.** What is the monetary multiplier? How does it work?

**19.** What would happen to maximum checkable-deposit creation if the reserve ratio increased or if the reserve ratio decreased? Explain using numerical examples.

**20.** Why does the repayment of a loan decrease the supply of money?

#### ANSWERS

##### Chapter 32 Money Creation

##### FILL-IN QUESTIONS

- fractional, less than 100%
- money, reserves, panics, regulation
- assets, net worth, liabilities, assets = liabilities + net worth
- vault, till
- not changed
- its district Federal Reserve Bank
- required, liabilities
- Fed
- fractional
- actual, required
- control of
- an asset, a liability
- decreased, increased, decreased, increased
- excess
- increases, 10,000, increases, 10,000
- profits, liquidity
- Federal funds, Federal funds
- required, smaller
- excess, monetary multiplier
- decrease, \$36



## TRUE-FALSE QUESTIONS

1. F, p. 646
2. F, p. 646
3. F, p. 647
4. F, p. 647
5. T, p. 647
6. F, p. 648
7. F, pp. 648-649
8. T, p. 648
9. T, p. 649
10. F, p. 649
11. T, p. 649
12. F, p. 649
13. F, pp. 649-650
14. T, pp. 649-650
15. T, pp. 650-651
16. F, pp. 650-651
17. T, p. 652
18. F, p. 652
19. T, p. 652
20. F, p. 652
21. T, p. 653
22. F, p. 655
23. F, p. 655
24. T, p. 655
25. T, p. 657

## MULTIPLE-CHOICE QUESTIONS

1. d, p. 646
2. a, p. 647
3. d, p. 648
4. a, p. 649
5. d, p. 649
6. b, p. 649
7. b, p. 649
8. a, pp. 649-650
9. b, pp. 650-651
10. b, pp. 650-651
11. a, p. 652
12. b, p. 652
13. a, pp. 653-654
14. d, p. 655
15. d, p. 655
16. c, p. 655
17. c, p. 655
18. b, p. 649
19. d, p. 649
20. b, pp. 649-651
21. a, pp. 649-651
22. b, pp. 653-655
23. a, p. 655
24. c, pp. 653-655
25. c, p. 657

## PROBLEMS

## 1. Table

	(a)	(b)	(c)	(d)
<b>Assets:</b>				
Cash	\$100	\$100	\$100	\$100
Reserves	150	150	260	300
Loans	500	500	500	500
Securities	200	200	200	100
<b>Liabilities and net worth:</b>				
Checkable deposits	850	850	960	900
Stock shares	100	100	100	100

## 2. a. Table (and \* below)

	(1a)	(2a)	(3a)	(4a)	(5a)
A. Required reserves	\$35	\$40	\$30	\$36	\$44
B. Excess reserves	5	0	-5	4	1
C. New loans	5	0	*	4	1

## b. Table (and \* below)

	(1b)	(2b)	(3b)	(4b)	(5b)
<b>Assets:</b>					
Cash	\$ 10	\$ 20	\$ 20	\$ 20	\$ 15
Reserves	40	40	25	40	45
Loans	105	100	*	104	151
Securities	50	60	30	70	60
<b>Liabilities and net worth:</b>					
Checkable deposits	180	200	*	184	221
Stock shares	25	20	25	50	50

\*If an individual bank is \$5 short of reserves it must either obtain additional reserves of \$5 by selling loans, securities, or its own IOUs to the reserve bank or contract its loans by \$25.

## 3. Table

(1)	(2)	(3)	(4)
12.50%	\$8	\$1	\$8
16.67	\$6	1	\$6
20	\$5	1	\$5
25	\$4	1	\$4
30	\$3.33	1	\$3.33
33.33	\$3	1	\$3

## 4. Table

	(1)	(2)	(3)	(4)	(5)	(6)
<b>Assets:</b>						
Cash	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
Reserves	105	105	110	110	110	110
Loans	200	220	200	250	200	250
Securities	200	200	200	200	200	200
<b>Liabilities and net worth:</b>						
Checkable deposits	505	525	500	550	500	550
Stock shares	50	50	50	50	50	50
Loans from Federal Reserve	0	0	10	10	10	10
Excess reserves	4	0	10	0	10	0
Maximum possible expansion of the money supply	20	0	50	0	50	0

**SHORT ANSWER AND ESSAY QUESTIONS**

- |                 |                 |
|-----------------|-----------------|
| 1. p. 646       | 11. pp. 650–651 |
| 2. p. 646       | 12. p. 651      |
| 3. p. 646       | 13. p. 652      |
| 4. p. 649       | 14. p. 653      |
| 5. pp. 647–648  | 15. p. 653      |
| 6. p. 648       | 16. p. 653      |
| 7. p. 649       | 17. pp. 653–655 |
| 8. p. 649       | 18. p. 655      |
| 9. p. 649       | 19. p. 655      |
| 10. pp. 649–650 | 20. p. 657      |